

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of  
J. Yong Ryu

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Attorney File: CDT 1792

Group Art Unit: 1754

Examiner

Serial No.: 09/977,666

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For: HYDROGENATION CATALYST AND HYDROGENATION PROCESS

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INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

This document and the attachments hereto are presented in accordance with the requirements of 37 CFR § 1.56. Below is listed information which may be material to the cited application and, which the examiner may deem important and wish to consider in conjunction with the examination of the cited application. The relevance of the information is a subjective test and its submission here may be based on the fact the information provides background or in some manner relates to subject matter disclosed or claimed in the cited application. The submission of information herewith is not intended to be, nor is it an admission either directly or indirectly that all or any portion of said information is prior art as to any aspect of the invention(s) disclosed or claimed in the cited application. A copy of each reference is enclosed herewith. (See attached Form).

The relevance of each of the foreign language references is discussed in the body of the application but is repeated hereinbelow.

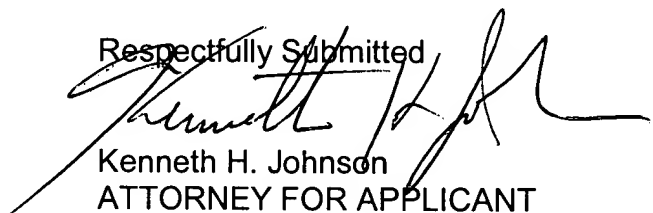
Fr 1 253 947 (1960) disclosed the copper catalyst for selective hydrogenation of acetylenic compounds in diolefin or monoolefin streams. The selective hydrogenation was carried out in vapor phase. 99.9 - 99.999% purity copper was supported on high surface area (25 - 300 m<sup>2</sup>/g) supports such as gamma alumina. Copper content of the catalyst was in a range of 5 to 20%. The catalyst may contain less than 0.1% other metals (based on metal content of the catalyst) such as Fe, Ni, Ru, Rh, Pd, Ir or Pt as promoter. The selective hydrogenation was carried out in both vapor and liquid phase. U.S. Pat. Nos. 4,440, 956 (1984) and 4, 493, 906 (1985) disclosed the improved copper catalysts supported on the very

specific alumina such as gamma alumina prepared from aluminum alkoxides, which are useful for removing alkynes in liquid hydrocarbon streams. The patentee characterized the gamma alumina as having 60 to 90% of pores which should have a pore diameter between about 40 Å and 120 Å, and not more than 25% nor less than 2% had pore diameter between 1000 Å to 10,000 Å. The nitrogen surface area of the alumina was from about 68 to 350 m<sup>2</sup>/g. The catalyst contained 3 to 13 weight % Cu. The catalyst contained minor amounts of at least one polyvalent activator metal selected from the group consisting of silver, manganese, cobalt, nickel and chromium. High purity of alumina, especially in terms of sodium (should be less than 0.15 wt %) and Fe<sub>2</sub>O<sub>3</sub> (less than 0.06 wt %) contents, was claimed to be critical due to shrinkage of the surface area caused by frequent catalyst regeneration.

Ger 2 109 070 (1970) disclosed copper (26%)-zinc oxide catalyst for selective hydrogenation of acetylenic compounds in 1,3-butadiene stream in vapor phase.

A translation of Ger 2,412,191 is provided.

Respectfully Submitted

  
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02/08/02

#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:

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